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Statistical Services Branch

Data Quality Statement - Comprehensive

Queensland Perinatal Data Collection

Statistical Service Branch, Queensland Health

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Data Quality Statement – Comprehensive: Queensland Perinatal Data Collection

The Queensland Perinatal Data Collection (QPDC) is a compilation of records collected from all public hospitals, private hospitals, and private midwifery or medical practitioners who birth babies outside hospitals, for all births occurring in Queensland. The QPDC commenced in November 1986.

Key Data Quality Points

- Updates to the QPDC reporting requirements occur each financial year due to Commonwealth, State and/or local reporting requirements. New data sets, data elements and classifications may be introduced, others may be removed as concepts and/or data elements are superseded.
- A number of data quality activities have been conducted over the past few years to improve the QPDC. The most significant improvements to quality have come about as a result of a shift in moving from a primarily paper-based collection to an electronic file, or where hospitals don't have their own clinical system, through the collection of the data by the hospital using an in-house purpose-built application – Perinatal Online (PNO). Electronic data from private hospitals has risen from 55.7% of births in 2009 to 100% in 2017, and from public hospitals has risen from 33.1% in 2009 to 99.8% in 2018.
- Linkage of the QPDC with the Queensland Hospital Admitted Patient Collection (QHAPDC) has been conducted to improve the quality of both collections in respect to demographic data and recording of births (data items for both mother and baby). Further checks have included for example, whether post-partum hysterectomies have been performed, Neonatal Abstinence Syndrome, Female Genital Mutilation/Cutting, baby's date of birth and sex, amongst others.
- From late 2018, automatic linkage of the perinatal data with the Registry of Births, Deaths, Marriages (RBDM) notice of birth and registration of birth data has been conducted to improve the completeness of the data collection.
- Indigenous status data are collected for the mother and the baby and continue to be of suitable quality for statistical reporting purposes.
- As stated, the change to the collection methodology (paper forms to electronic) has seen a significant improvement in data quality, but also changes to the data being reported (for example, congenital anomalies). This change may affect jurisdictional comparisons, particularly as similar methodology changes may also be occurring across jurisdictions.

Data Quality Framework Dimensions

The Statistical Services Branch (SSB) uses the term 'fit for purpose' to define data quality in line with national standards and best practice. This defines data quality in terms of the data users and their needs.

To assess and adequately describe the quality of the data for the QPDC, the SSB utilises the Australian Bureau of Statistics Data Quality Framework[1] and its seven dimensions of quality – institutional environment, relevance, timeliness, accuracy, coherence, accessibility and interoperability.

Institutional environment

Legislative obligations

Chapter 6, Part 1 - Perinatal Statistics of the *Public Health Act 2005* includes a requirement that perinatal data be provided to the Chief Executive of Queensland Health for every baby born in Queensland.

Legislation governing the confidentiality and lawful disclosure of QPDC data is provided by the *Public Health Act 2005* (Section 219 – 228). Release of information from the QPDC must remain lawful pursuant to that Act and follow national guidelines on the release of health data for statistical purposes. These guidelines are available at:

Guidelines for the disclosure of secondary use health information for statistical reporting, research and analsyis

Reporting mandates

As a signatory to *the National Health Information Agreement 2013* (NHIA), Queensland is required to provide perinatal data to the Maternal and Perinatal Health Unit, Australian Institute of Health and Welfare (AIHW) according to the agreed National Minimum Data Sets (NMDSs).

The current Perinatal NMDS and Perinatal National Nest Endeavours Data Set (NBEDS) can be found here.

[1] ABS 2009, *ABS Data Quality Framework*, May 2009, cat. no. 1520.0, ABS, Canberra

Relevance

Purpose

The purpose of QPDC is to collect information during the antenatal, labour and birth and postnatal period for monitoring pregnancy, childbirth and the postnatal period for both the mother and baby(s) in Queensland. The data collection provides a source of information for research into obstetric and neonatal care and assists with the planning of Queensland's health services and the monitoring of neonatal morbidity, perinatal mortality and congenital anomalies.

Scope

The scope of QPDC is all live births, and stillbirths of at least 20 weeks gestation and/or at least 400 grams in weight.

With the exception of perinatal deaths, the scope of the data collection ceases at the point of formal separation from the birth event (by discharge, transfer or death) or if the mother and/or baby has been hospitalised for more than 28 continuous days.

Perinatal deaths (i.e. those deaths that occur in the 28-day period after birth) are only included for those babies that are born and die in Queensland where the death can be established. Where a birth has occurred in Queensland and a neonatal death has occurred outside of Queensland the data for this death is not captured in the QPDC. Conversely, where a birth has occurred outside of Queensland and a neonatal death occurs in Queensland, this death is also not captured in either State's data collection. These are known national limitations.

QPDC covers all birth events reported by public or private hospitals or independent birthing practitioners. Births that occurred outside Queensland, but where the mother was usually resident in Queensland, are not captured by the data collection. Conversely, births that occurred in Queensland, but where the mother's usual residence was overseas or interstate, are included in the data collection.

The data collection includes data items relating to the mother, including demographic characteristics and factors relating to the pregnancy, labour and birth, body mass index (BMI), smoking status and diabetes, Female Genital Mutilation/Cutting; and data items relating to the baby, including birth status (live or stillbirth), sex, gestational age at birth, birth weight, APGAR score, Neonatal Abstinence Syndrome, and neonatal length of stay.

Methodology

For most public hospitals data collection begins at the first antenatal visit and data are added throughout the course of the pregnancy in real-time. Private hospitals may start later in the process when the mother presents for birthing depending on whether antenatal care is provided at the private hospital or not.

There has been a significant shift to electronic data collection with a subsequent improvement to the quality of the data being supplied, e.g. a reduction in 'not stated' responses.

Percentage of births in maternity hospitals reported to the QPDC electronically, 2009 to 2020

Hospital type	Public hospitals	Private hospitals
2009	33.1	55.7
2010	57.7	55.3
2011	69.8	55.8
2012	70.5	56.4
2013	73.3	59
2014	90.1	60.1
2015	90.1	95
2016	95.7	100
2017	97.5	100
2018	99.8	100
2019	99.8	100
2020	99.8	100

Around 2% (covering home births and free births and a few non-maternity hospitals where a birth may occur) are electronic PDF based records that are emailed to Queensland Health.

Free births, while in scope of the data collection, may not always be reported as part of the QPDC, particularly where these births are not registered. However, they may be captured if the mother or baby present to hospital following the birth.

The QPDC is supplemented with death data from the RBDM.

Death data relating to either the mother or the baby, and coronial information relating to an unexpected death may be used to further specify cause of death coding. Supporting placental pathology, autopsy, karyotyping and discharge summaries are also used to further enhance the quality of the deaths data.

Use of data

QPDC data are provided to the Australian Institute of Health and Welfare under the relevant national agreements and are used as a source of information for the:

- Perinatal National Minimum Data Set
- Perinatal NBEDS
- AIHW's publication *Australia's mothers and babies*
- Productivity Commission's *Report on Government Services* (ROGS)
- Productivity Commission's *Report on Overcoming Indigenous Disadvantage: Key Indicators*
- Australian Commission on Safety and Quality in Health (ACSQHC) Care Maternal morbidity indicators.

QPDC local usage of the data includes:

- The Queensland Perinatal Statistics Annual Report
- SSB Causes of Perinatal Death Dashboard
- SSB Queensland Maternal and Perinatal Quality Council (QMPQC) Indicator Dashboard
- involvement in the development of the Congenital Anomalies Linked File (CALF) Dashboard

QPDC data are also published on SSB InfoBank:

- Mothers and Babies by Facility
- Baby Friendly Health Initiative – Fluid Indicator

Timeliness

QPDC data are required to be provided from hospitals and birthing practitioners to the Statistical Services Branch (SSB) within 35 days of the birth. In practice, QPDC data are collected on a monthly basis (typically births that occur in the month being reported are bundled). The majority of hospitals provide data by the due date, with only a small number of hospitals requiring follow-up for outstanding data. Follow-up commences within 48 hours of the data being overdue and usually results in prompt data supply.

QPDC data are finalised on a calendar year basis in line with current national and international convention. Changes to the data collection are introduced on a financial year basis (as this aligns with major releases across the electronic health information cycle for admitted patients) but with mapping or other transformations considered and applied to meet any reporting requirements on a six monthly or calendar year basis.

When electronic PDF MR63D forms are received, data are coded and input manually from the electronic PDF forms by the SSB.

Some validation occurs at the source for all data provided electronically in Queensland. One of the electronic systems, Perinatal Online (PNO), has extensive validation checks and is used by most public hospitals and some private hospitals. Validation processes commence as soon as the data are received by Queensland Health. Data loading and validation are run manually upon receipt of the data. Approximately 6,000–8,000 validation queries are run during the load process, including a large number of AIHW validation queries. The exceptions are output as a report and sent back to the hospital, and the hospital has 1-2 weeks to return amendments. Most hospitals meet this timeframe or respond quickly when followed-up.

All amendments received are applied manually at SSB, the data are then reloaded and the validation process runs again. This process continues until all validation queries have been resolved.

In tandem with the validation process, SSB cross-references the data with other data sources, such as the RBDM, on an ongoing basis. Mother and baby data are also cross-referenced with admitted patient data for record matching and consistency checks.

This process takes approximately 6 months from the end of the birth cohort until the data are finalised (i.e. Jan-Dec 2020 interim finalised data are available in July 2021). Preliminary data can be made available prior to the data being finalised.

Significant delays can occur with the submission of data when hospitals migrate to or implement new electronic systems.

Since 2017 approximately 98% of the data submissions use an electronic system and legislation makes it clear that data needs to be supplied within specific timeframes. A significant improvement has been implementing validation at point of entry in the Perinatal Online (PNO) application, which improves the quality of the initial supply of data from hospitals using this system.

Accuracy

The quality of the perinatal data is the responsibility of the data suppliers as custodians of the source data.

The quality of coding for clinical conditions is the responsibility of the hospital when data is provided via PNO or another electronic format, or SSB when the data are provided via an electronic PDF MR63D form.

To ensure that the statistics produced are reliable, SSB undertakes extensive validation checks of the data each month when the data are received, then quarterly, six monthly and annually.

SSB runs a series of input editing checks on the data to check unusual and incomplete data items. These checks include: data entry checks, coding checks, valid values, logical consistency, incomplete reporting and missing values. Any potential errors are verified with the hospital contact or practitioner who completed the form. Corrections may be made in response to these edit queries.

In tandem with the validation process, SSB cross-references the data with other data sources on an ongoing basis.

From 2012, a number of additional data checks between the Queensland Hospital Admitted Patient Collection (QHAPDC) and the QPDC were introduced, where data are compared on a quarterly basis. Where there is a variation, hospitals are asked to confirm and/or update details on their source systems where relevant. When a change is required to either the QPDC or QHAPDC, an electronic amend record is supplied or the required amendments are made by SSB.

Data linked between the QPDC and QHAPDC identify around 20-30 missing mother and baby records per month between both data collections. These are followed up with the hospital or birthing practitioner. This variation can be caused by a number of circumstances including but not limited to, babies born before arrival at hospital, homebirths and so on.

The implementation of the electronic PNO form has seen an improvement in data quality. Previously, error rates for missing/incomplete/inconsistent data items were very high, despite rigorous quality checks being applied on receipt of the data. With the introduction of validation into PNO the error rates are now significantly lower and the time to resolve errors has reduced. One hospital showed a significant reduction in errors generated from 70% for paper forms compared to 37% for electronic forms.

Clinical coding within the PNO form is restricted to selection from a prescribed ‘pick list’, although a free text field exists for users to record additional conditions if required. Descriptors for diagnosis and treatment are linked to ICD-10-AM/ACHI codes. Other electronic data submitted by hospitals

may contain clinical codesets that are not constrained to a pick list. The ICD-10-AM death codes can be mapped back to ICD-10 in alignment with international conventions.

While conditions and treatment provided in a neonatal intensive care unit (NICU), special care nursery (SCN) or intensive care unit (ICU) should be included if the mother or baby is transferred there for treatment, it is expected that there may be quality issues with this information from some data suppliers due to clinical and system separation.

QPDC collects the Indigenous status of the mother and the baby. Information collected on the Indigenous status of the mother commenced in July 1998 and of the baby in July 2010. No information is collected on the Indigenous status of the father. Indigenous status of the mother and baby data are of quality for statistical reporting purposes.

Coherence

Perinatal data items may be introduced or amended depending on national reporting requirements and/or local or planning or reporting needs. As such, analysis of particular data items over time could be significantly impacted.

The QPDC is reconciled against the QHAPDC and against Queensland's RBDM registrations for both births and perinatal deaths.

Data from the QPDC are linked by SSB with data from QHAPDC. Data linked from 1 July 2007 to approximately 2 months prior to the current date are available, although timeliness and completeness will vary by facility.

Changes made over time to the data collection have been documented in the QPDC electronic file format. A summary of the changes from July 2014 onwards are listed in the table below:

Date	Release	Details
July 2014	1.28	• Amendment to Perineum code 'other' • Remove 'Gold Coast Birth Centre' from Hospital Transferred From and Hospital Transferred To (Mother and Baby) • Add 'Gold Coast University Birth Centre' to Hospital Transferred From and Hospital Transferred To (Mother and Baby) • Add 'Donor Egg' to Mother Code file (Code Type C) • Amendment to 'Other Cephalic' in Baby File (Presentation at Birth) • Replace 'Reason for Caesarean' with a blank filler in Baby File • Amendment to 'Regular Respirations' field in Baby File • Amendment to PPH volume in Baby File • Add 'Main Reason for Caesarean' in Baby Code File • Add 'Main Reason for Caesarean Identifier' to Baby File • Add 'First Additional Reason for Caesarean' to Baby File • Add 'First Additional Reason for Caesarean Identifier' to Baby File • Add 'Second Additional Reason for Caesarean' to Baby File • Add 'Second Additional Reason for Caesarean Identifier' to Baby File
July 2014	1.29	• Remove Baby Code Type E = RC Reason for Caesarean • Add Baby Code Type E =CM Main reason for Caesarean

Date	Release	Details
		• Add Baby Code Type E =CO First Additional Reason for Caesarean • Add Baby Code Type E =CT Second Additional Reason for Caesarean
July 2014	1.30	• Amendment to 'Main Reason for Caesarean identifier' field in Baby File • Amendment to 'First Additional Reason for Caesarean identifier' in Baby File • Amendment to 'Second Additional Reason for Caesarean identifier' in Baby File
July 2015	1.31	• Update of ICD-10-AM/ACHI from 8th Edition to 9th Edition • Add new item 'Antenatal Screening performed for Edinburgh Depression Score and range' to Mother file • Add new item 'Antenatal Screening performed for Domestic Violence' to Mother file
July 2016	1.32	• No change to content from 2015/2016 version 1.31
July 2017	1.33	• Update of ICD-10-AM/ACHI from 9th Edition to 10th Edition • Add Birthing Centre codes for hospital transferred from • Add Birthing Centre codes for mother transferred to • Add Birthing Centre codes for baby transferred to
July 2018	1.34	• Update to Antenatal screening performed for Edinburgh Depression Scale Score and range • Add Antenatal Screening for Edinburgh Postnatal Depression Status • Add Antenatal Screening for Edinburgh Postnatal Depression Score • Amendment to values in Baby's Birth Code – Code Type I • Amendment to code description in Baby Record – baby's sex • Update of year in file format examples • Terminology updates to conform to METeOR and QHDD
July 2019	1.35	• Update of ICD-10-AM 10th edition to ICD-10-AM 11th edition • Add data quality and compliance statement to the Introduction • Amend the Descriptions to add further clarity to the following Data Items: - Last Menstrual Period estimation indicator - Estimated Date of Confinement estimation indicator - Mother's Date of Birth estimation indicator • Add new response value of 'declined to answer' to: - Cigarette smoking during the first 20 weeks indicator

Date	Release	Details
		- Cigarette smoking after 20 weeks indicator - Antenatal screening performed for illicit drug use indicator - Antenatal screening using Edinburgh Postnatal Depression Scale indicator - Amend validations to include new value of 3. • Closure of the Antenatal Screening for Domestic Violence indicator and addition of new Antenatal Screening performed for Family Violence indicator • Closure of Antenatal Screening for Alcohol Use and addition of new Alcohol items below: - Alcohol consumption in the first 20 weeks of pregnancy indicator - Number of standard drinks consumed when drinking alcohol in the first 20 weeks of pregnancy - Alcohol consumption frequency in the first 20 weeks of pregnancy - Alcohol consumption after 20 weeks of pregnancy indicator - Number of standard drinks consumed when drinking alcohol after 20 weeks of pregnancy - Alcohol consumption frequency after 20 weeks of pregnancy. • Addition of CPAP ventilation and Intubation response values to Resuscitation Methods • Updated Terminology to conform to METeOR and QHDD
July 2020	July 2020 V1.0	• Add Female-primary maternity model of care identifier in Mother Record • Female maternity model of care at the onset of labour or non-labour caesarean section identifier in Mother record • Terminology updates to confirm to METeOR and QHDD
July 2021	July 2021 V1.0	• New additional ‘Actual Place of Birth’ codes to include born before arrival and community, non-medical (freebirth) in Baby’s Birth Detail Record

Accessibility

SSB provides a range of publicly released products for QPDC from the following link https://www.health.qld.gov.au/hsu/peri

Additional information about QPDC is available at https://www.health.qld.gov.au/hsu/collections/pdc

If you would like to request QPDC data email hlthstat@health.qld.gov.au.

The Australian Institute of Health and Welfare (AIHW) produces reports which comprise information supplied by the jurisdictions. These reports can be found at https://www.aihw.gov.au/reports-statistics/population-groups/mothers-babies/overview

Interoperability

The manual of instructions for the completion and notification of births to the QPDC is at https://www.health.qld.gov.au/hsu/collections/pdc

Information relating to the QPDC, as well as the associated metadata can be found in the Queensland Health Data Dictionary (QHDD), which is managed by the Statistical Standards and Strategies Unit, SSB. Further information on the QHDD can be obtained by emailing dqstd@health.qld.gov.au.

Definitions and related information for the collection of data at the national level can be sourced from the AIHW's online metadata repository, METeOR located at https://meteor.aihw.gov.au/content/index.phtml/itemId/727291

Statistics and analyses generated from QPDC will contain caveat information relevant to the issue being addressed. These caveats may include discussion of coverage, completeness of data supplied, and other inclusion or exclusion criteria used to generate the data. A number of technical reports have been published and are available at: https://www.health.qld.gov.au/hsu/tech_report/tech_report

Document control

Version history

Version	Date	Comments
0.1	28/12/2018	Initial Draft
0.2	7/01/2019	Amendments by J Ellerington
0.3	14/01/2019	Amendments by C Moser
0.4	25/01/2019	Incorporation of feedback from B Wilkinson
0.5	7/02/2019	Minor amendments from R Leeuwendal
0.6	18/02/2019	Minor amendments from Sue Cornes and Susan Wood
1.0	8/03/2019	Finalisation of comments and amendments
1.1	3/01/2020	Inclusion of changes implemented 1 July 2019
1.2	3/01/2019	Amendments by J Ellerington
1.3	22/01/2019	Amendments by B Wilkinson, R Leeuwendal, J Ellerington and V Dunne
2.0	26/02/2020	Finalisation of comments and amendments
2.1	25/10/2021	Amendments by C Moser and J Ellerington
3.0	26/10/2021	Finalisation of comments and amendments
3.1	9 November 2021	Amendments by S Cornes, B Wilkinson and J Ellerington